

- C4
3. (Once Amended) The electronic package of claim 1 further comprising an electrically conductive stiffening member attached to the second conductive layer of the capacitor by a second adhesive layer.
4. (Once Amended) The electronic package of claim 3 further comprising a device receiving region extending through the dielectric substrate, the conductive trace layer and the capacitor, and further comprising an electronic device attached to the device receiving region on the stiffening member by a third adhesive layer.
- C5  
13. (Once Amended) The electronic package of claim 1 wherein the non-conductive polymer is blended with high dielectric constant particles formed from a material selected from the group consisting of barium titanate, barium strontium titanate, titanium oxide, lead zirconium titanate and tantalum oxide.

A version showing the changes made to the specification and claims is attached hereto.

#### REMARKS

Claims 1 to 26 are pending in the application. Claims 5-7 and 20-26 have been withdrawn from consideration. Claims 1-4 and 8-19 are rejected.

Support for the amendment to the paragraph on p. 3 of the specification referring to a non-conducting polymer is found in original claim 13. The remaining amendments are to correct typographical errors.

The amendment to the paragraph on p. 10 is to correct a typographical error.

Claim 1 has been amended to correct an error made in the previous claim amendment. The phrase "made of a non-conductive polymer blended with high dielectric constant particles" was inserted in the wrong portion of claim 1. The present amendment is supported by the specification, for example, at p. 3, lines 19-20. Claim 1 has also been amended to clarify that the capacitor is an internal capacitor. Support for this amendment appears in the specification at, e.g., p.1, lines 1-2 (integrated capacitor) and Fig. 3, 5, and 6.

Claims 1, 3, and 4 have been amended to refer to adhesive layers that are typically part of the electronic package structure. Support for these amendments appear in the specification at, e.g., p. 7, lines 6-11.

Claim 13 has been amended to recognize the antecedent basis for "a non-conductive polymer blended with high dielectric constant particles" in claim 1 and to correct typographical errors.

### **The Objections**

#### **Drawings**

The drawings are objected to under 37 CFR 1.83(a).

Applicants have not prepared new drawings because the dielectric layer (made of a non-conductive polymer blended with high dielectric constant particles) is already shown in the Figures as item 13.

Because the claimed feature is already shown in the Figures, Applicants do not know how to correct the drawing. If the Examiner still believes a corrected drawing is required, Applicants request a specific explanation of how the correction is to be made.

#### **Specification**

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter.

Applicants believe this objection is moot in light of amended claim 1.

### **The Rejections**

#### **35 U.S.C. 112, first paragraph**

Claims 1-4 and 8-19 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the specification was filed, had possession of the claimed invention. The Office Action states that it is not clear where in the

originally filed specification support for “a dielectric substrate mounted on the first side of the conductive trace layer made of a non-conductive polymer blended with high dielectric constant particles” can be found.

Applicants submit that the correction of the previous amendment to claim 1 makes this rejection moot.

Based on the foregoing, Applicants submit the rejections of claims 1-4 and 8-19 under 35 U.S.C. § 112, second paragraph, should be withdrawn.

35 U.S.C. 103(a) – Kabumoto in view of DiStefano and Parker

Claims 1-3, 8-10, 12 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kabumoto (U.S. 5883428) in view of DiStefano (U.S. 5455390) and Parker (U.S. 5633785).

Applicants submit that according to MPEP 2142, to establish a case of *prima facie* obviousness, three basic criteria must be met: 1) there must be some suggestion or motivation, either in the references or generally known to one of skilled in the art, to modify or combine reference teachings, 2) there must be reasonable expectation of success, and 3) the prior art references must teach or suggest all the claim limitations. The ability to modify the method of the references is not sufficient. The reference(s) must provide a motivation or reason for making the changes. *Ex parte Chicago Rawhide Manufacturing Co.*, 226 USPQ 438 (PTO Bd. App. 1984).

Applicants respectfully submit that the references cannot support a case of *prima facie* obviousness as to the claims because, among other possible reasons, the cited references in combination do not provide a motivation or suggestion for an internal capacitor having a capacitance of from about 1 nF/sq.cm. to about 100 nF/sq.cm. and having a dielectric layer made of a non-conductive polymer blended with high dielectric constant particles. Applicants base their position on the following:

As explained in *Ashland Oil, Inc., v. Delta Resins & Refractories, Inc.*, 227 USPQ 657 (Fed. Cir. 1985), to combine two references there must be some teaching, suggestion, or

inference in either reference, or both, or knowledge generally available to one of skill in the art to combine the relevant teachings of the references. Consideration must be given to teachings in the references that would have led one skilled in the art away from the claimed invention. A claim cannot be used as a blueprint for extracting individual teachings from the reference.

The Office Action states that it would have been obvious to use the non-conductive polymer of DiStefano as the dielectric substrate of Kabumoto in order to use a material of low water absorbing capacity so as to protect the package. Applicants could not find support in DiStefano for the statement that non-conducting polymers have low water absorbing capacity. In any event, because the non-conducting polymer dielectric layer is in the interior of an internal capacitor (as stated in amended claim 1), a low water-absorbing polymer would provide no protection to the package. Applicants submit that the references in combination provide no motivation to use a non-conducting polymer as a dielectric in an internal capacitor.

The Office Action further states that it would have been obvious to use the capacitance of Parker in the package of Kabumoto and DiStefano.

Kabumoto teaches away from using internal capacitors to achieve higher capacitance at col. 2, lines 43-54:

[S]ince the specific dielectric constant of the sintered aluminum oxide which composes the insulating substrates of semiconductor element-housing packages is as low as approximately 7, it becomes necessary to have a great number of pairs of ground planes [10] and power-supply planes [11] placed opposing each other and sandwiching part of the insulating layers which form the insulating substrate [1], or to have vast opposing areas of the paired ground planes and power-supply planes, in order to store sufficiently increased capacitance between the paired ground planes and power-supply planes as decoupling capacitors, and this creates the drawback that extremely thick, large and heavy packages are required for housing a semiconductor element.

Kabumoto teaches the use of an external capacitor (chip capacitor 9) with ground plane 10 and power-supply plane 11 functioning as conducting paths:

“The ground plane 10 and the power-supply plane 11 [] function as conducting paths to electrically connect the respective electrodes of the chip capacitor 9 to the ground bonding pad 5a and the power-supply bonding pad 5b [.] (Col. 6, lines 17-21) . . . [In combination with the other elements of the system this allows] normal operation of the semiconductor element 3 without preventing reduction in power-supply noise by the chip capacitor 9. (Col. 6, lines 36-39)

Accordingly, there is no motivation to use the high capacitance internal capacitor of Parker in the Kabumoto structure.

Applicants submit that the Examiner is improperly using the claims of the present application as a blueprint for extracting individual teachings from references.

In addition, as the Office Action admits on p. 8 (in the rejection of claim 13), Kabumoto, DiStefano and Parker do not disclose a dielectric material made of a non-conductive polymer with high dielectric particles. Therefore, these references in combination do not disclose all the elements of the present invention, as is required by MPEP 2142.

The Office Action further states that Kabumoto, DiStefano, and Parker “read on” the dielectric substrate of the present invention. However, Applicants respectfully submit that “reading on” is only relevant in determining infringement of a claim. It is not relevant in determining obviousness. *See, e.g., In re Benno*, 226 USPQ 683 (CCPA 1964), which states that the contention that a claimed configuration would be obvious from a reference claim on which it reads is a non sequitur. The scope of a patent’s claims determines what infringes the patent; it is no measure of what it discloses. A patent discloses only that which it describes, whether specifically or in general terms, so as to convey intelligence to one capable of understanding.

For these reasons, Applicants submit that the cited references will not support a 103(a) rejection of the claims invention and request that the rejection be withdrawn.

In addition to the foregoing arguments, Applicants submit that a dependent claim should be considered allowable when its parent claim is allowed. *In re McCain*, 1012 USPQ 411

(CCPA 1954). Accordingly, provided the independent claims are allowed, all claims depending therefrom should also be allowed.

35 U.S.C. 103(a) – Kabumoto in view of DiStefano and Parker and further in view of Dehaine

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kabumoto (U.S. 5883428) in view of DiStefano (U.S. 5455390) and Parker (U.S. 5633785) as applied to claims 1 and 3 and further in view of Dehaine (U.S. 4982311).

Applicants submit that the arguments related to Kabumoto in view of DiStefano and Parker above also apply to the instant rejection. As the rejection is only applied to a dependent claim, Applicants do not address them separately at this time.

35 U.S.C. 103(a) – Kabumoto in view of DiStefano and Parker and further in view of Brandt

Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kabumoto (U.S. 5883428) in view of DiStefano (U.S. 5455390) and Parker (U.S. 5633785) as applied to claims 1 and 3 and further in view of Brandt (U.S. 6068782).

Applicants submit that the arguments related to Kabumoto in view of DiStefano and Parker above also apply to the instant rejection. As the rejection is only applied to a dependent claim, Applicants do not address them separately at this time.

Based on the foregoing, it is submitted that the application is in condition for allowance. Withdrawal of the rejections under 35 U.S.C. 112 and 103 is requested. Examination and reconsideration of the claims are requested. Allowance of the claims at an early date is solicited.

The Examiner is invited to contact Applicants' attorney if the Examiner believes any remaining questions or issues could be resolved.

Applicants believe that no fees are necessary in relation with the filing of the present communication. If the Applicants are mistaken, the Applicants hereby authorize the

Commissioner to deduct any additionally required fees from or credit any overpayment to  
Deposit Account 13-3723.

Respectfully submitted,

February 20, 2003  
Date

By: Melanie Gover  
Melanie G. Gover, Reg. No.: 41,793  
Telephone No.: (512) 984-4308

Office of Intellectual Property Counsel  
3M Innovative Properties Company  
Facsimile No.: 651-736-3833

**Version with markings to show amendments made:****In the Specification:**

Please amend the paragraph starting at p. 3, line 17 as follows:

The capacitors are preferably thin-film parallel-plate type capacitors. Preferred dielectric materials for the capacitors include barium [titinate] titanate, strontium [titinate] titanate, and a polymer, e.g., a non-conductive polymer, blended with high dielectric constant particles such as barium [titinate] titanate, barium strontium [titinate] titanate, titanium oxide, lead zirconium [titinate] titanate and tantalum oxide. The capacitance of a typical thin film, parallel-plate capacitor is from about 1 nF/sq. cm. to about 100 nF/sq. cm.

Please amend the paragraph starting at p. 10, line 26 as follows:

A blend of dielectric material may be prepared by providing a resin such as epoxy, optionally including dielectric or [insulating] insulating particles such as barium titanate, and optionally including a catalyst for the epoxy. Absorbed water or residual materials on the particles; e.g., carbonates resulting from the manufacturing process can be removed from the surface of the particles before use by heating the particles in air at a particular temperature for a period of time, for example, 350°C for 15 hours. After heating, the particles may be stored in a dessicator prior to use in the blend.

**In the Claims:**

Please amend the claims as follows:

1. (Thrice Amended). An electronic package, comprising:
  - a conductive trace layer having a first side and a second side, the conductive trace layer being patterned to define a plurality of interconnect pads;
  - a dielectric substrate mounted on the first side of the conductive trace layer [made of a non-conductive polymer blended with high dielectric constant particles];
  - an internal capacitor having a capacitance of from about 1 nF/sq.cm. to about 100 nF/sq.cm. including a first conductive layer, a second conductive layer and a layer of



dielectric material made of a non-conductive polymer blended with high dielectric constant particles disposed between the first and the second conductive layers, the first conductive layer [mounted adjacent] attached to the second side of the conductive trace layer by a first adhesive layer;

a plurality of interconnect regions extending through the first conductive layer and the dielectric material layer of the capacitor; and

an interconnect member connected between each of the conductive layers of the capacitor and a corresponding set of the interconnect pads, the first conductive layer of the capacitor being electrically connected to a first set of the interconnect pads and the second conductive layer of the capacitor being electrically connected to a second set of the interconnect pads, the interconnect members corresponding to the second set of interconnect pads extending through one of the interconnect regions.

3. (Once Amended) The electronic package of claim 1 further comprising an electrically conductive stiffening member [mounted adjacent] attached to the second conductive layer of the capacitor by a second adhesive layer.
4. (Once Amended) The electronic package of claim 3 further comprising a device receiving region extending through the dielectric substrate, the conductive trace layer and the capacitor, and further comprising an electronic device [mounted in] attached to the device receiving region on the stiffening member by a third adhesive layer.
13. (Once Amended) The electronic package of claim 1 wherein the [dielectric material is made of a] non-conductive polymer is blended with high dielectric constant particles[, the high dielectric constant particles having been] formed from a material selected from the group consisting of barium [titinate] titanate, barium strontium [titinate] titanate, titanium oxide, lead zirconium [titinate] titanate and tantalum oxide.